CITY OF LODI
INFORMAL INFORMATIONAL MEETING
"SHIRTSLEEVE" SESSION
CARNEGIE FORUM, 305 WEST PINE STREET
TUESDAY, DECEMBER 19, 2006

An Informal Informational Meeting ("Shirtsleeve" Session) of the Lodi City Council was held Tuesday, December 19, 2006, commencing at 7:01 a.m.

A. ROLL CALL

Present: Council Members – Hansen, Hitchcock, Katzakian, and Mayor Johnson

Absent: Council Members – Mounce

Also Present: City Manager King, City Attorney Schwabauer, and City Clerk Johl

B. TOPIC(S)

B-1 "PCE/TCE Remediation Update"

City Manager King briefly introduced the subject matter.

Public Works Director Prima provided a PowerPoint presentation regarding the PCE/TCE remediation (filed). Topics of general discussion included what are PCE and TCE; the scientific makeup of PCE/TCE; status from 1989 to the present and related maps; 2005 cost estimates of approximately $45 million; 2005 rate increase criteria; remediation techniques including soil vapor extraction, sparging, groundwater extraction, and drilling; cone penetrometer testing data; lithology cross section; sampling; Busy Bee remediation and system; Central Plume remediation; Guild soil vapor extraction system; matrix from the Lodi Central Plume showing the amount of PCE removed; new approach for dual phase extraction (DPE); DPE system at Oddfellows parking lot; DPE equipment; 2007 future plans for all plumes; access rights for remediation; next steps; remediation goals including protection of water for citizens, groundwater, and cost effectiveness; current groundwater situation for all plumes; and proposed remediation costs.

Council Member Hansen inquired about the DPE unit. Mr. Prima stated it is provided by Greg's Drilling.

Council Member Hitchcock asked why the amounts that have been taken out are not equal. Mr. Prima stated the amounts are not exact and are related to periodically adjusting the well system.

In response to Council Member Hansen's questions, Mr. Prima stated they will know by spring if their efforts worked.

In response to Mayor Johnson's question, Mr. Prima stated the abandoned wells cannot be recaptured because they have been destroyed. Mr. Prima also provided an overview of the status of the remaining wells in the area.

Council Member Hansen inquired about similar situations in other cities. Mr. Prima stated every situation in every city is different and the Board's involvement is different. Mr. Prima shared comparisons with Modesto, Turlock, and Chico. He also stated the experts believe there are unique conditions in Lodi.

Myrna Wetzel asked if elevation is a factor. Mr. Prima replied no.

City Attorney Schwabauer stated soil types are different in various areas and change penetration abilities. Mr. Schwabauer stated several states have set up remediation legislation for dry cleaning businesses as a result. He also compared the Merced situation. Council Member Hitchcock inquired about the remediation approaches and their affect on costs. Mr. Prima provided an overview of the various remediation approaches from the pre-Donovan days to the present, including individual plume assessment and a more unified approach.

Council Member Hansen suggested presenting the information to the community. City Manager King stated signage will be placed at the well sites to indicate the work that is being done.

Mayor Johnson suggested doing two presentations, one more technical in nature and the other relatively simple.

Council Member Katzakian asked what the typical well depth is. Mr. Prima stated it can be up to 500 feet.

PUBLIC COMMENTS:

- In response to Myrna Wetzel's question, Mr. Prima stated a deeper cleaning is more costly than a shallow one and the human body does not retain and accumulate PCE/TCE.

- Pat Patrick inquired about the downtown property that fell out of escrow. City Attorney Schwabauer stated the Comprehensive Environmental Response, Compensation, and Liability Act is pretty clear that lenders do not have liability for groundwater. He stated the City has given out letters regarding liability in connection with property acquisitions, but it was not approached by this particular business.

  In response to Myrna Wetzel's question, Mr. Prima stated PCE/TCE does evaporate into the air when exposed, but it still needs to be cleaned or destroyed at that time.

C. COMMENTS BY THE PUBLIC ON NON-AGENDA ITEMS

None

D. ADJOURNMENT

No action was taken by the City Council. The meeting was adjourned at 8:01 a.m.

ATTEST:

Randi Johl
City Clerk

AGENDA ITEM

CITY OF LODI
COUNCIL COMMUNICATION

AGENDA TITLE: PCE/TCE Remediation Update

MEETING DATE: December 19,2006 (Shirtsleeve Session)

PREPARED BY: Public Works Director

RECOMMENDED ACTION: None

BACKGROUND INFORMATION: Staff will present the current status of the PCE/TCE Remediation Program, including updated maps of the groundwater contamination. In addition, activities anticipated in 2007 will be discussed

FISCAL IMPACT: Not applicable

FUNDING AVAILABLE: Not applicable

Richard C. Prima, Jr.
Public Works Director

RCP/pmf

APPROVED: _____
Blair King, City Manager

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12/12/2006

PCE/TCE Groundwater Contamination Update

December 2006

City Council Shirtsleeve Session presentation

Overview

- Recap of contamination/litigation
- Recap of rate increase
- Current status of litigation
- Review of remediation techniques
- Current status of remediation
- Future plans

PCE/TCE – What are they?

- Chlorinated solvents used in dry cleaning (mainly PCE) and other industrial and commercial applications (mainly TCE)
- Carcinogenic
  - Drinking water limit is 5 parts per billion
  - Public health goals are lower (0.06 PCE; 0.8 TCE)
- Do not accumulate in food chain
- Physical properties such that they move readily through soil to groundwater and create large plumes

Health effects both from drinking and breathing

Properties that affect impacts to groundwater:

High volatility, density, relative solubility

Low viscosity, interfacial tension, partitioning to soil materials, degradability

Recap (1)

- Contamination discovered in 1989
- Two rounds of State investigation
  - 1994 URS report – finds widespread contamination, recommends further investigation
  - 1996 NERI Study – identified a number of potential sources and recommended further work
- City involved due to sewers and alleged operation of municipal wells
- 1996 – City hires Michael Donovan with strategy to pursue responsible parties' insurance and recover all City costs
- 1999 – As money to pursue strategy runs out, City borrows funds from Lehman Bros.

Initial discovery of PCE in new water tank during testing following construction.

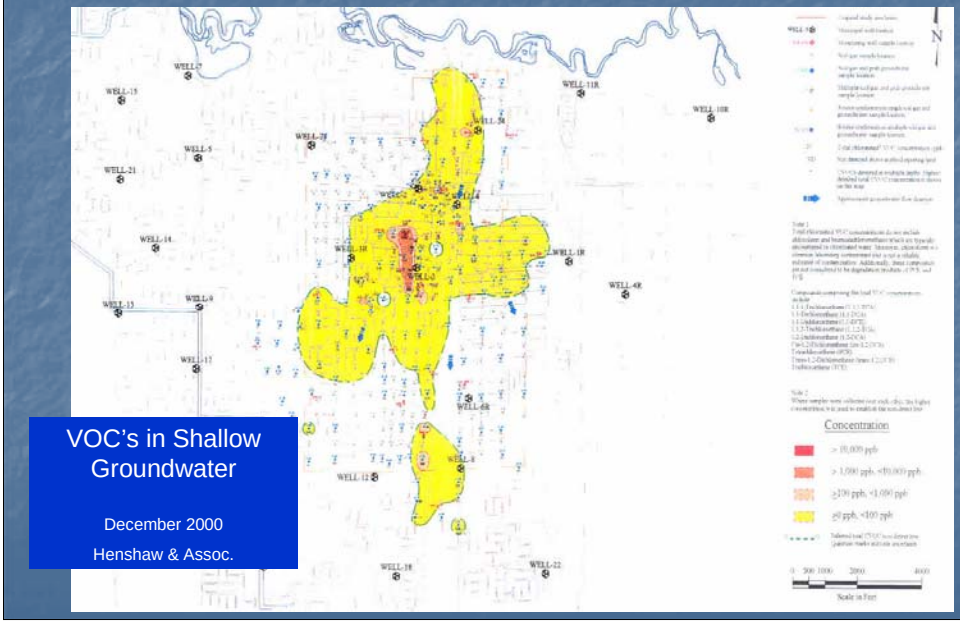
PCE typically used in dry cleaning. TCE used in various industrial cleaning and degreasing operations.

URS study done under contract with State Department of Toxic Substances Control and followed up on earlier work done by the State Regional Water Quality Control Board (RWQCB).

NERI study done under contract with the RWQCB and recommended additional source research and testing, sewer line investigation, perform vapor extraction, additional groundwater sampling and property title/business research.

Both studies identified "potentially responsible parties" including dry cleaners, printers and other industrial sites/businesses as well as City operations.

Recap (2)



VOC's – volatile organic compounds, includes PCE & TCE

Work by Donovan's consultants tried to show contamination as one co-mingled plume and did not investigate deeper groundwater.

Subsequent work divided the plume and litigation into 5 separate units (Northern, Central, Eastern/Busy Bee, Southern and Southwest/Central).

Later investigation has shown greater depth of contamination.

Recap (3)

- 2004 – Strategy ends unsuccessfully with various court rulings and City Council action to terminate attorneys and consultants involved; new attorneys and consultants hired
- 2004 – Settlements reached with:
  - Busy Bee defendants who will pursue cleanup
  - USF&G (one of City's insurers) for $9 million
  - Lehman - $32 million claim for principal & interest settled with $6 million payment to Lehman

Busy Bee remediation estimated at $500,000; their insurer paying for performance contract; City potentially liable for up to $100,000 in excess costs under some circumstances.

USF&G settlement was on a $100,000 indemnity policy and shows the potential value of defense obligations.

City had previously repaid $1.9 million to Lehman.

Recap (4)

- 2005 – Central Plume Settlement
  - $7.375 million received from other parties
  - $2.2 million added by City to establish C.P. trust fund
  - total cost (including operations & maintenance for 30 years) for cleanup method proposed by City estimated at $15.8 million
- 2006 – Settlement (in concept) Southern Plume; needs court approval
- 2006 – Northern and Western Plume joint defense work nearly completed and settlement mediations underway (trial date – June 2008)
- 2006 – City still in litigation with Donovan and other City insurers
- 2006 – rate recall initiative fails 64% to 36%

Settlements also include rights to access to land for future remediation facilities and other terms which have value, but were not quantified.

Southern Plume remediation estimated at $3.2 million. Settlements include $1.51 million in cash from other parties, plus an earlier settlement of $1 million.

Tentative settlements with all but two Northern Plume parties as of early December.

2005 Cost Estimate

- Net cost of implementing remediation plan is estimated to be $45.7 million and includes capital, operating, and legal expenses, and settlements due to other parties less settlement revenues due to the City
- Above costs include pay back of past expenses (total $12.2 million, which includes $1.9 million of expenses owed to the sewer utility)
- Need for funding (rate increase) determined

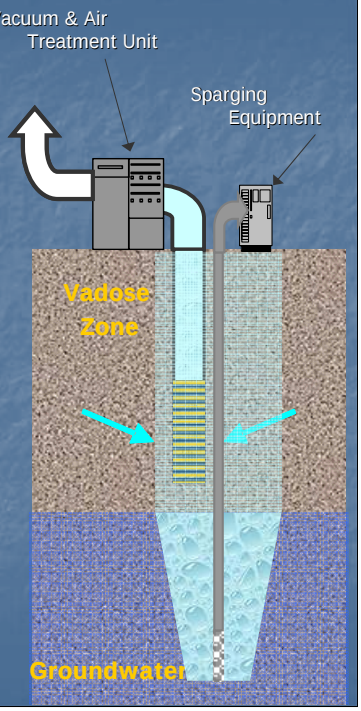
2005 Rate Increase Criteria

- No General Fund Impact
- Pay all costs (net of settlements) including past expenses
- Pay past expenses over 15 years, starting in year 3 of program
- Pay out of water fund, not sewer fund
- Maintain reserve in water fund
- Maintain water capital program, with allowance for water meters
- Modified “pay as you go” approach; no outside borrowing
- Result: Three $3.50/month increases implemented over 18 months; final increase scheduled for July 2007

Actual increases vary with type of service; $3.50 is for typical 3-bedroom residence.

Remediation Techniques

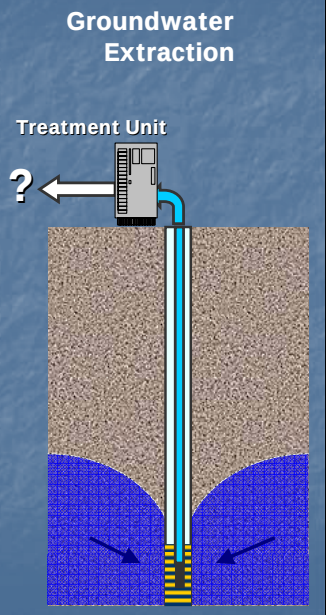
- Soil Vapor Extraction (SVE) – vacuum fans remove vapors from soil above groundwater via special wells; vapors removed from air with carbon or other methods
- "Sparging" – Injection of air (or oxidants, such as ozone) in groundwater to volatize (or destroy) the contaminants so they can be removed using SVE
- SVE/Sparge could run for five years



Typically done in source area

Remediation Techniques

- Groundwater Extraction – pumping groundwater containing PCE/TCE and removing from the water with carbon or other methods; water disposal to be determined
- Focused source area pumping for 3 to 10 years
- Pumping to remove low level contamination will take 30 + years
- Ongoing monitoring and reporting



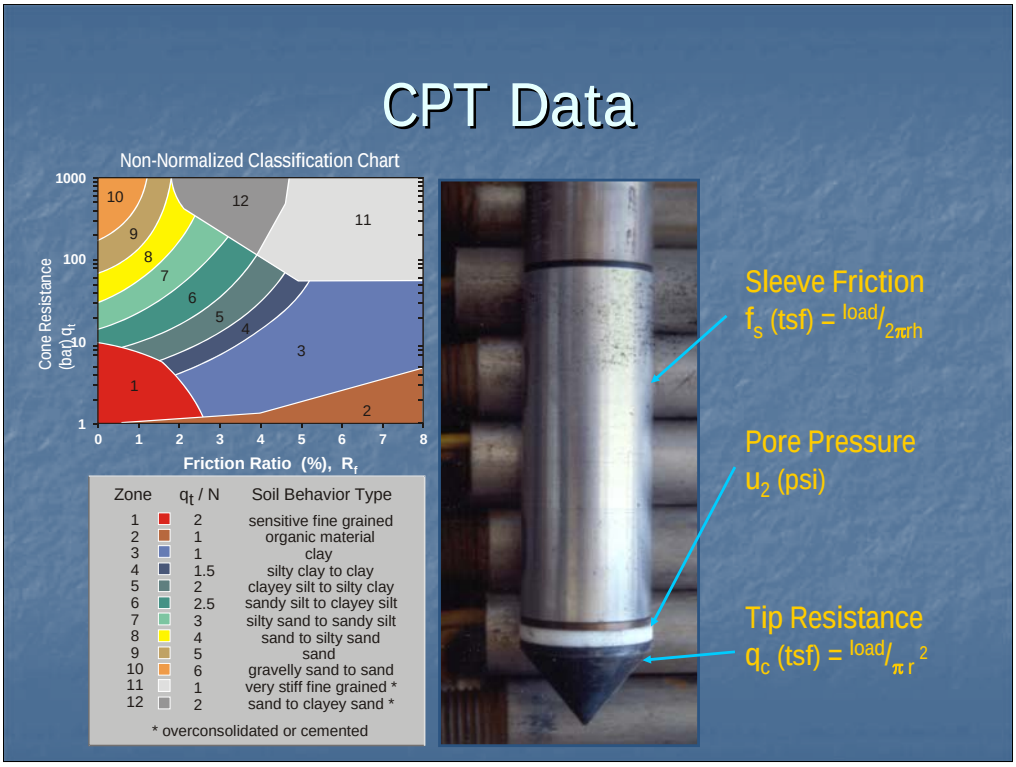
Groundwater extraction may be in source area or down gradient in plume.

Drilling

Two types of drilling rigs:

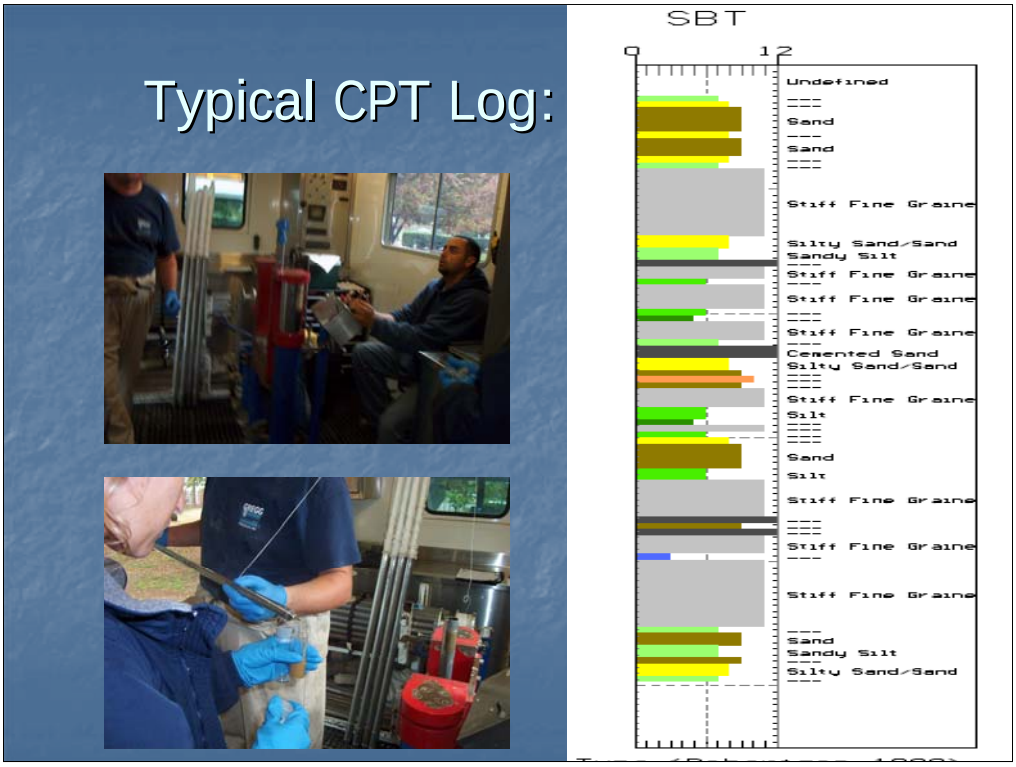
At left, rotary drill used for deep samples and for monitoring or extraction wells

At right, cone penetrometer rig used for shallower samples; provides accurate litholgy data as well as samples.



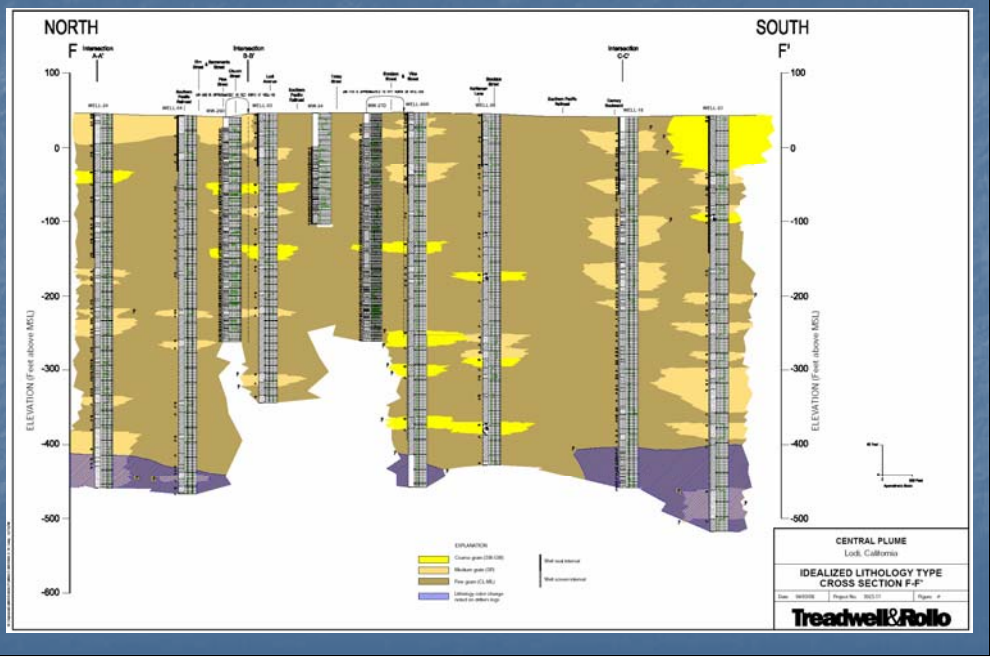
CPT cone tip at right – about 1.5 inches in diameter. Measures both tip resistance and friction along sides as it is pushed into the soil. Relative properties then compared to chart to determine soil characteristics.

Can go to over 150 feet deep in Lodi soils.



Views of inside of CPT rig; typical log.

Lithology Cross Section



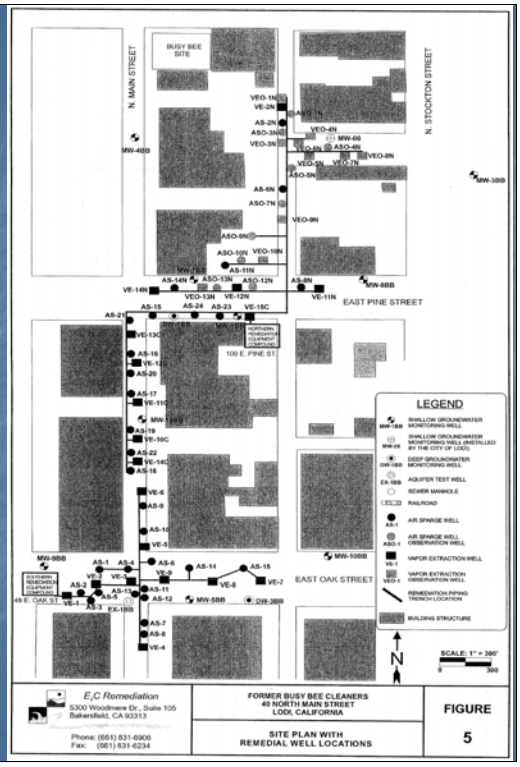
Logs from CPT's, drilling for monitoring wells and City wells compiled to provide cross section of underground lithology.

Sampling

Hollow core auger, sample tubes

Busy Bee Remediation

- Source located at Elm/Main
- SVE and air sparging wells located to south
- Treatment units located on Pine and Oak Streets
- Work being done through pay for performance contract issued by Busy Bee insurers



Busy Bee system installed and being operated by responsible party and their insurance company per terms of settlement agreement.

Busy Bee System

Top right – Pine St. in Adopt-A-Child parking lot

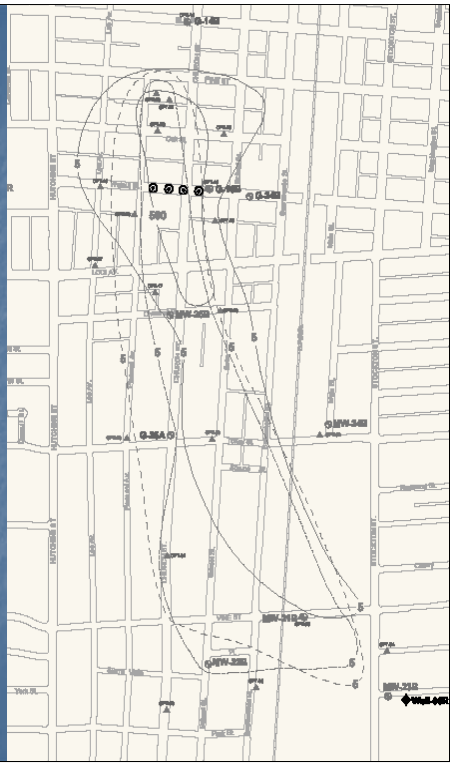
Lower right – Oak St. at railroad tracks w/Main

Top – Interior of Pine St. system

System will restart in early 2007 when final monitoring protocols and performance measures are agreed upon.

Central Plume Remediation

- Source area at alley south of Pine between Church & Pleasant
- Plume extends nearly one mile south, with eastern movement at southern end
- Plan submitted to Regional Board included:
  - Wellhead treatment planned at City Well 6 in Blakely Park
  - Groundwater extraction planned at southern part of high concentration area



Map of Central Plume PCE in groundwater; extends from Pine Street south to past Vine Street. Plan description based on information submitted to Regional Water Quality Control Board as part of settlement agreements.

May change as results of subsequent work are evaluated.

Guild Soil Vapor Extraction System

System turned over to City as part of settlement.

Information sign is to be added (won't be as large as shown in photo…)

Soil Vapor Extraction Plumbing & Valves

Vacuum blowers in plywood enclosure to reduce noise

Soil Vapor Extraction

Carbon vessels remove PCE from air stream

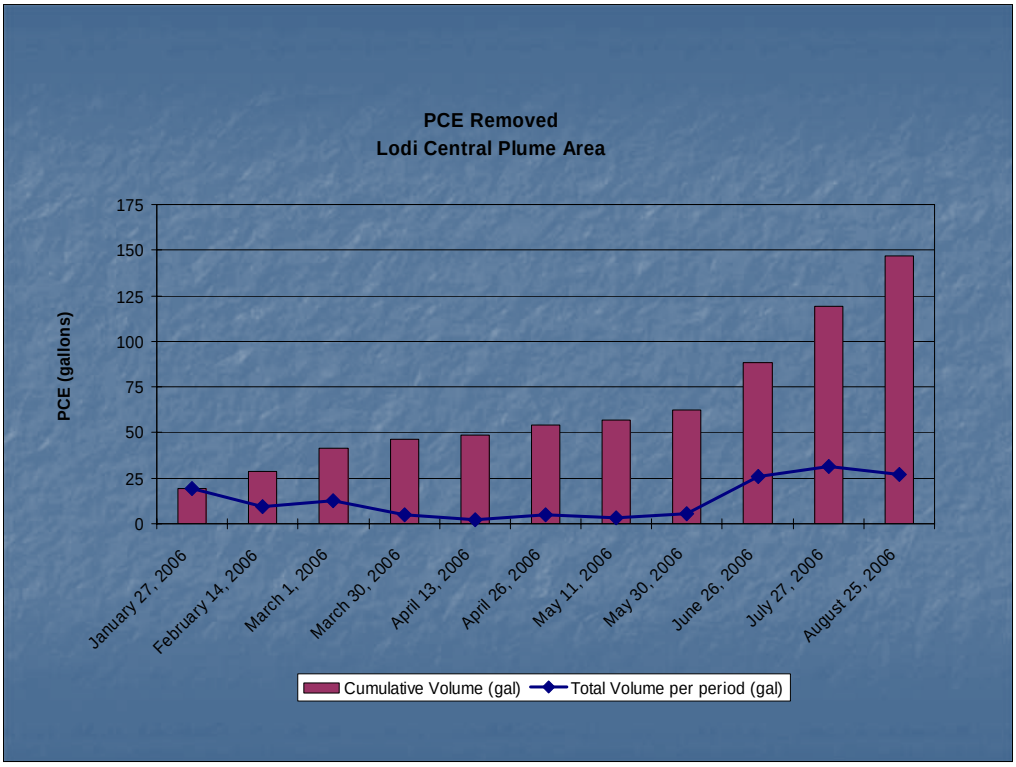
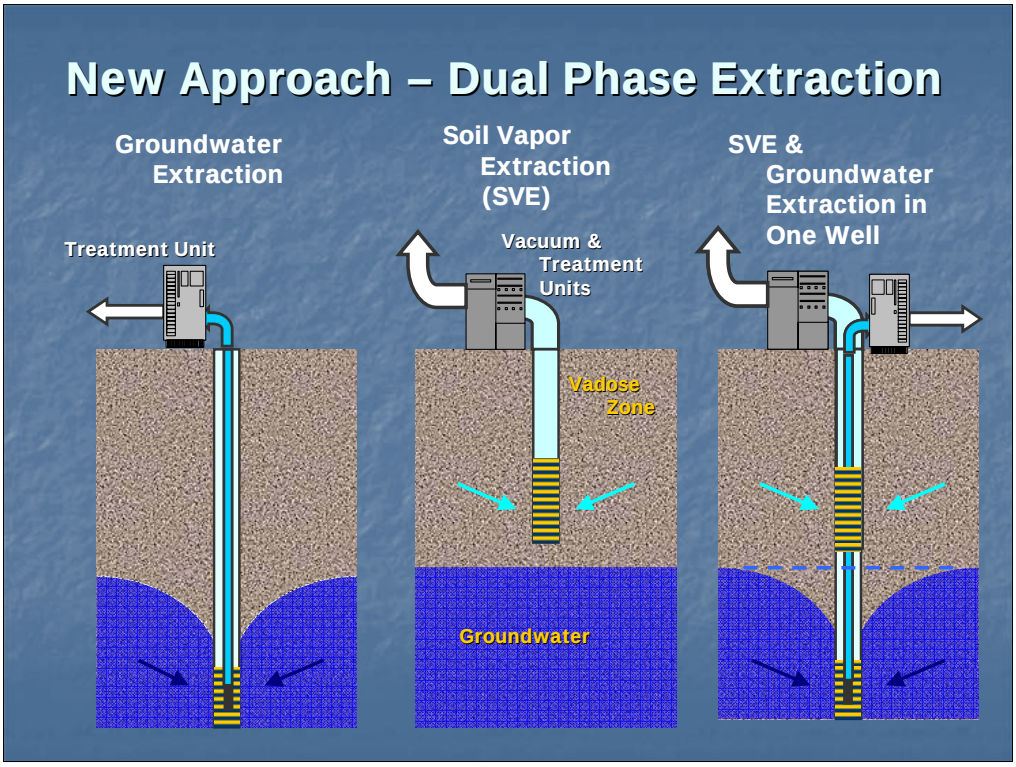


Chart shows PCE removed with the City re-operation of Guild system in 2006 – nearly 150 gallons (about 2,000 pounds) has been removed. The extended pilot test of the Guild system removed an estimated 7,200 pounds and the short pilot test at Oddfellows removed an estimated 1,050 pounds. (PCE weighs 13.6 pounds per gallon.) Thus, an estimated total of 750 gallons of PCE has been removed to date.

However, one gallon of PCE can contaminate 200 million gallons of water at the drinking water limit. As a point of reference, the entire City uses just over 5 billion gallons of water per year.



Schematic drawings:

At left, groundwater extraction well which pumps contaminated water and treatment equipment removes contaminant before discharge.

At center, soil vapor extraction well in which vacuum blowers at surface pull contaminated vapor from soil and treatment equipment removes contaminant before discharge to air.

At right, combined dual phase extraction well does both above removals in one well. Saturated soil dewatered by groundwater pump (below dashed line) is exposed to vacuum which removes more contaminant in less time.

DPE System at Oddfellows Parking Lot

Well (to left of picture) has been drilled. Air/Water separator is inside sound reduction blanket. Operation permits are being obtained. Soil and water drums will be removed.

DPE Equipment

Left: Carbon Vapor Treatment Vessel

Above: Water Treatment Vessels

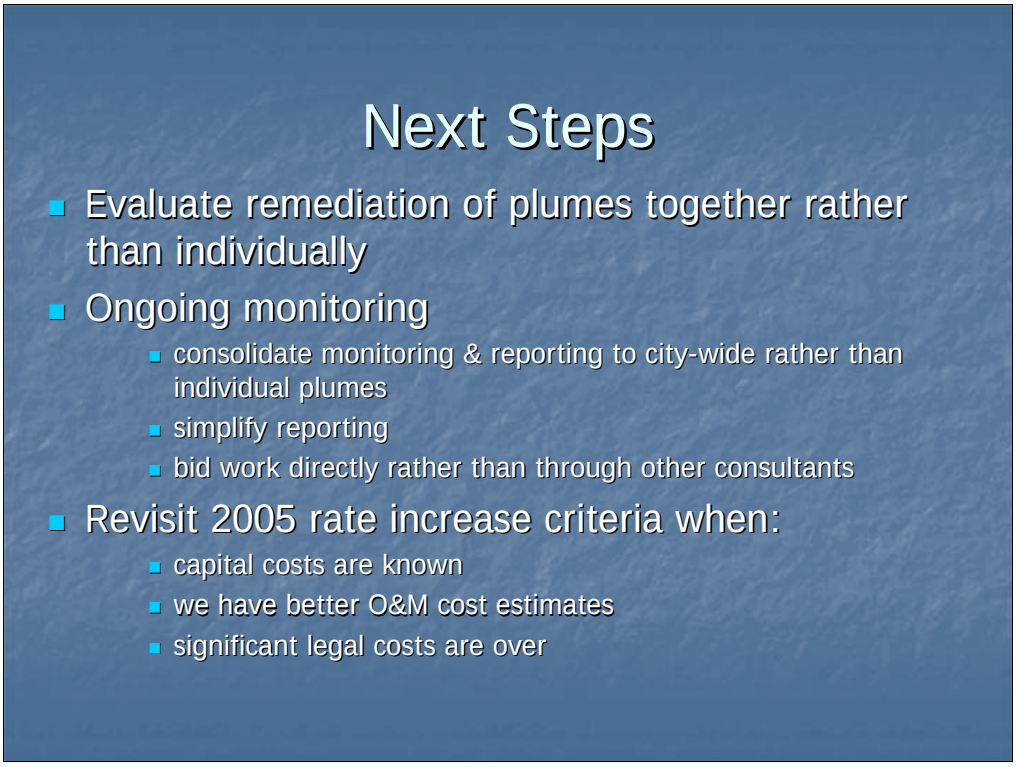
Equipment is temporary; once data is obtained, final system will be designed to optimize use of existing underground pipe and available land and equipment. Final system will be installed in 2007.

Future Plans (2007)

- Central Plume –
  - Finish DPE test design & install full system
  - Install down-gradient capture & treatment system at Well 6R (2007/8)
- Southern Plume
  - Begin actual remediation work
- Northern & Western Plume
  - Continue settlement negotiations
  - Hope to complete in early 2007; trial date – June 2008 for non-settled parties
  - Begin remediation work afterwards

Time frame on litigation with Donovan is uncertain.

Hartford litigation (City vs. its insurers) is in discovery phase.



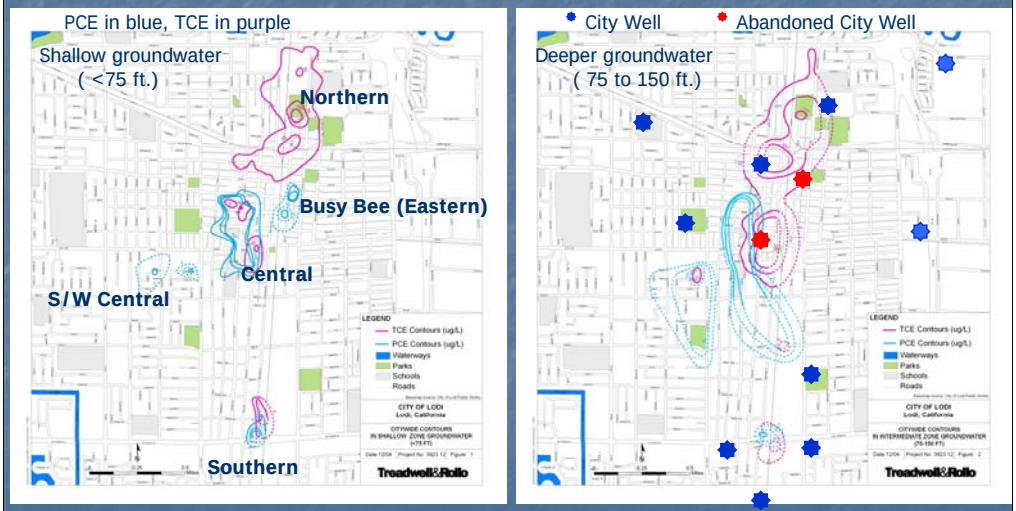
Ongoing monitoring costs should go down over time.

2005 rate increase should be evaluated in the future as costs are finalized.

Remediation Goals

- #1 - Protect the water the City provides to its citizens
- #2 – Protect the groundwater resource
  - don't waste the water
  - don't let the contamination leave the area
- #3 – Do 1 & 2 in a cost-effective and affordable way

Current Groundwater Situation



The data presented in this figure is for information purposes only. Much of it is sourced from third party work and the City makes no representations or adoptive admissions regarding its accuracy.

PCE & TCE Contours in Groundwater at two depth zones (less than 75 ft. and 75 ft. to 150 ft.)

Demonstrates the need to visualize the problem in three dimensions. For example:

•Busy Bee Plume shows at left in shallow groundwater but not in deeper groundwater.

•Plumes are generally more widespread in deeper groundwater.

•Plumes appear separate but may overlap at depth.

Layout of existing wells combined with potential replacement of abandoned wells suggests that a remediation plan involving installation of new treatment units at City wells could remediate and contain plumes. Existing well at southernmost edge of map already has carbon treatment, as do other wells further south.

Proposed Remediation Concept

- Treat major “hot spots” at source with minimal groundwater extraction; possibly reinject treated water or put to some beneficial use
- Use drinking water production wells (both existing and replacement wells) with treatment units to remove contaminants and to capture and contain plume

This plan could substantially reduce capital costs but would probably increase operating costs over the long term. However long-term operating costs are more affordable. More preliminary engineering and cost analysis is needed to refine this plan.

Questions/Comments?

- Information being posted on City website
- Older reports available at Library
- Website includes e-mail address for inquiries